

2012 Digital Arizona Council

~~Broadband~~



*Better
Internet*

Aaron V Sandeen – State Chief Information Officer



ASET

Arizona Strategic Enterprise Technology



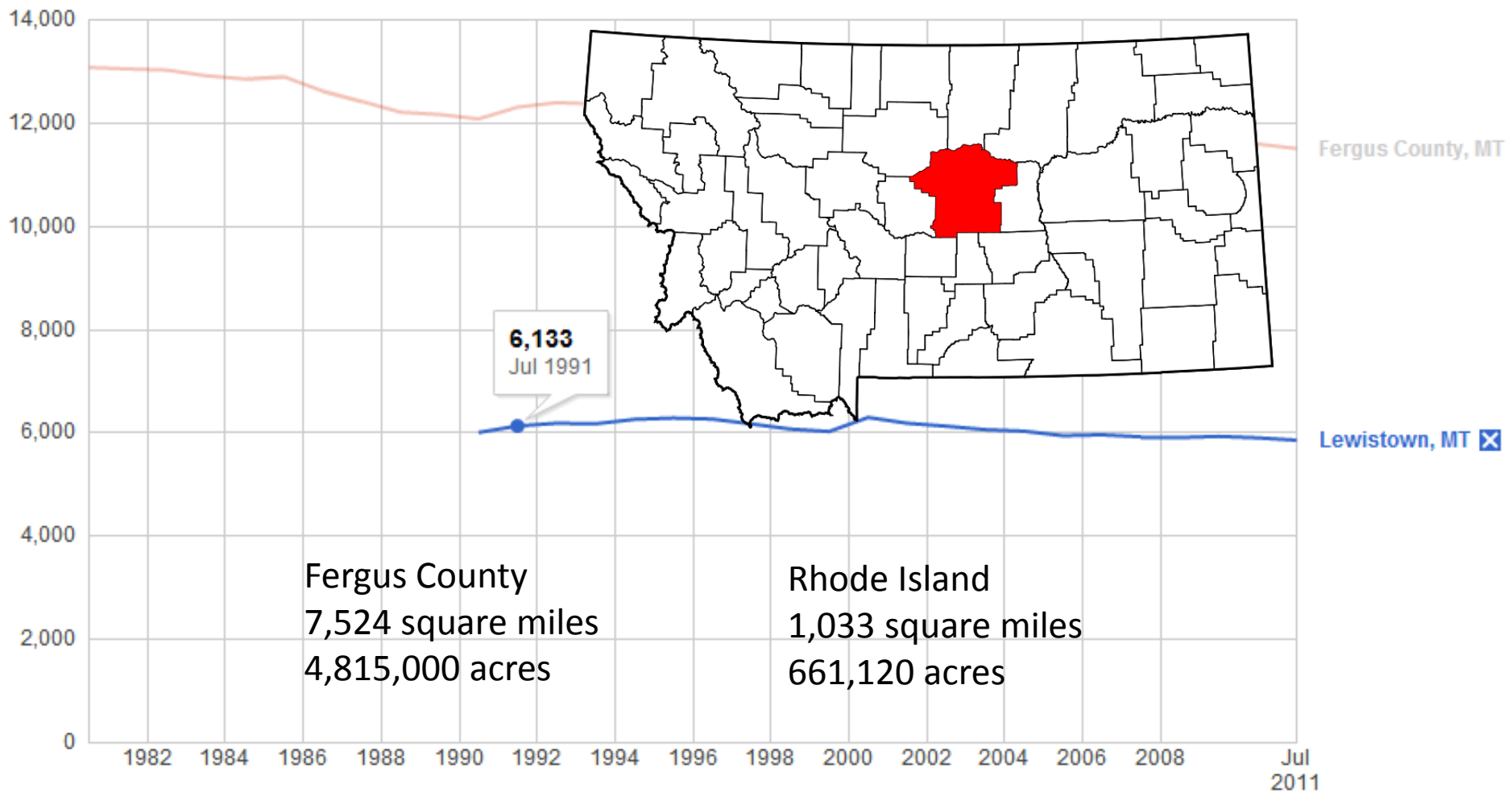
Bozeman



3 Stoplights 2 Elevators
This town was so small... (how small?)

LEWISTOWN MUNICIPAL AIRPORT
EL. 4167 FT.
LAT. 47-02-90 N / LONG. 109-28-0 W
LEWISTOWN, MONTANA



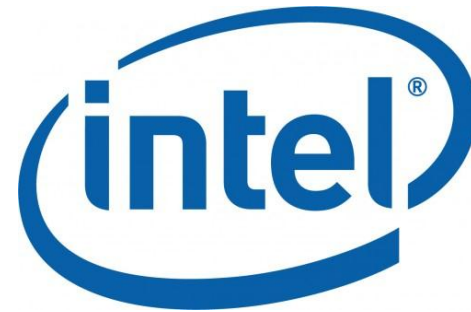




Microsoft®



UnitedHealth Group







Advancing Arizona's Economy

Arizona Race To The Top Round 2

Arizona Health Information Exchange







ASET

Arizona Strategic Enterprise Technology



```

//=====
// STATE:  write a class that implements this interface, stick in the
//          "planner.java" file, and you are done!!!  hahahahahaha
//
// VERSION for A* search, modified 3-3-2006  for NMU's CS 470 AI course
//=====

import java.awt.*;
import java.util.*;

interface State
{
    public State get_initial();
    public State get_goal();
    public Stack get_goals(); // Only if problem has multiple goal states
    public State get_copy() throws Exception; // Deep copy
    public boolean equals(State s);
    public void apply(Object operator) throws Exception; // State modifies itself
    public boolean legal_state();
    public Stack possible_operators();
    public void paint(Graphics g); // Only if we want visualization

    // BEGINNING OF A* METHODS (that is, methods needed by A* algorithm)
    // Methods for tracing back along a plan (path through state space)
    public State previousState(); // Returns previous state in plan
    public Object previousOperator(); // Returns operator that changes
    // previous state to this state.

    // Hueristic (h) and Cost(g) functions for this state s:  f(s) = g(s) + h(s)
    public double g(); // Current lowest known cost of traversing state space
    // from start state to this state
    public double h(); // Estimated cost of traversing state space
    // from this state to "nearest" goal state
    public double f(); // f() should just return g() + h()

    // If implemented and used, these five methods could save on lookup times
    public boolean on_closed_listQ(); // Returns true iff this state is on closed list
    public boolean on_open_listQ(); // Returns true iff this state is on open list
    public void on_closed_list(boolean yes_no); // Tells this state whether
    // it is now on closed list
    public void on_open_list(boolean yes_no); // Tells this state whether
    // it is now on closed list
    public int hash_value(); // Useful if hash table used to store states...
}

```








JOB GROWTH
TOP 5 STATE



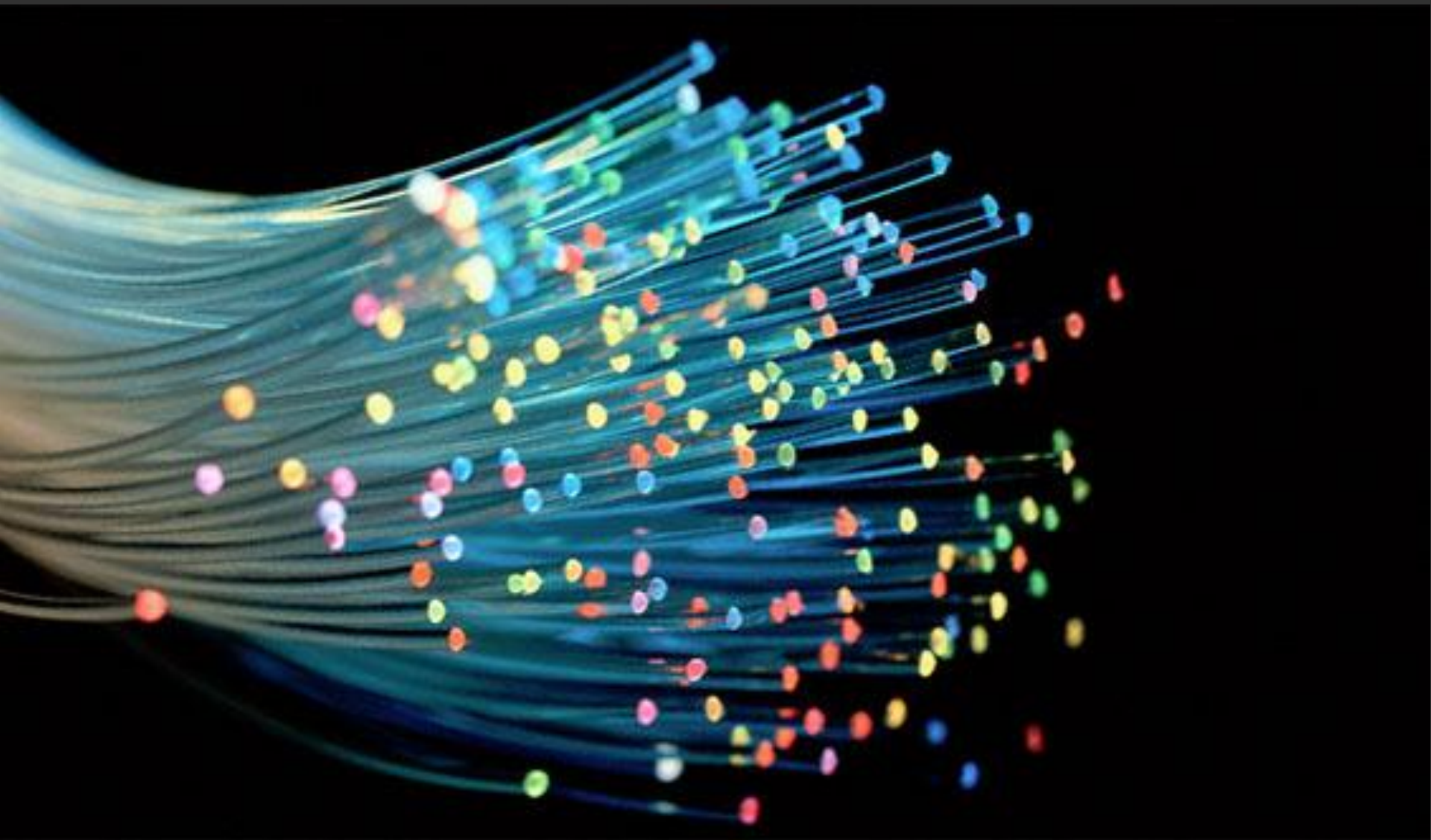
STATE REVENUE
11.4% INCREASE



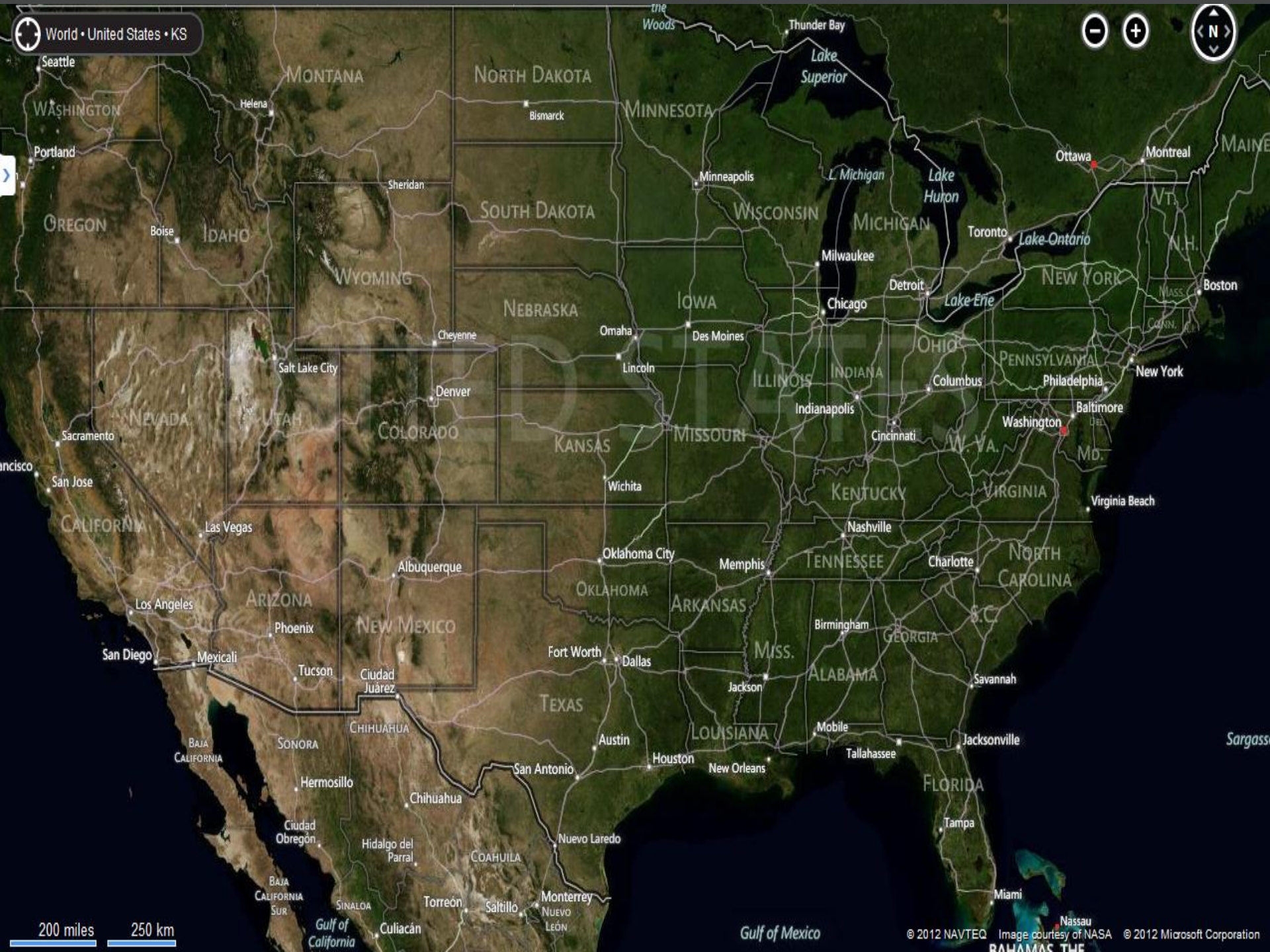
#1 FOR
ENTREPRENEURIAL
ACTIVITY IN U.S.



COMPETITIVENESS
FACTOR
TOP 10 STATE





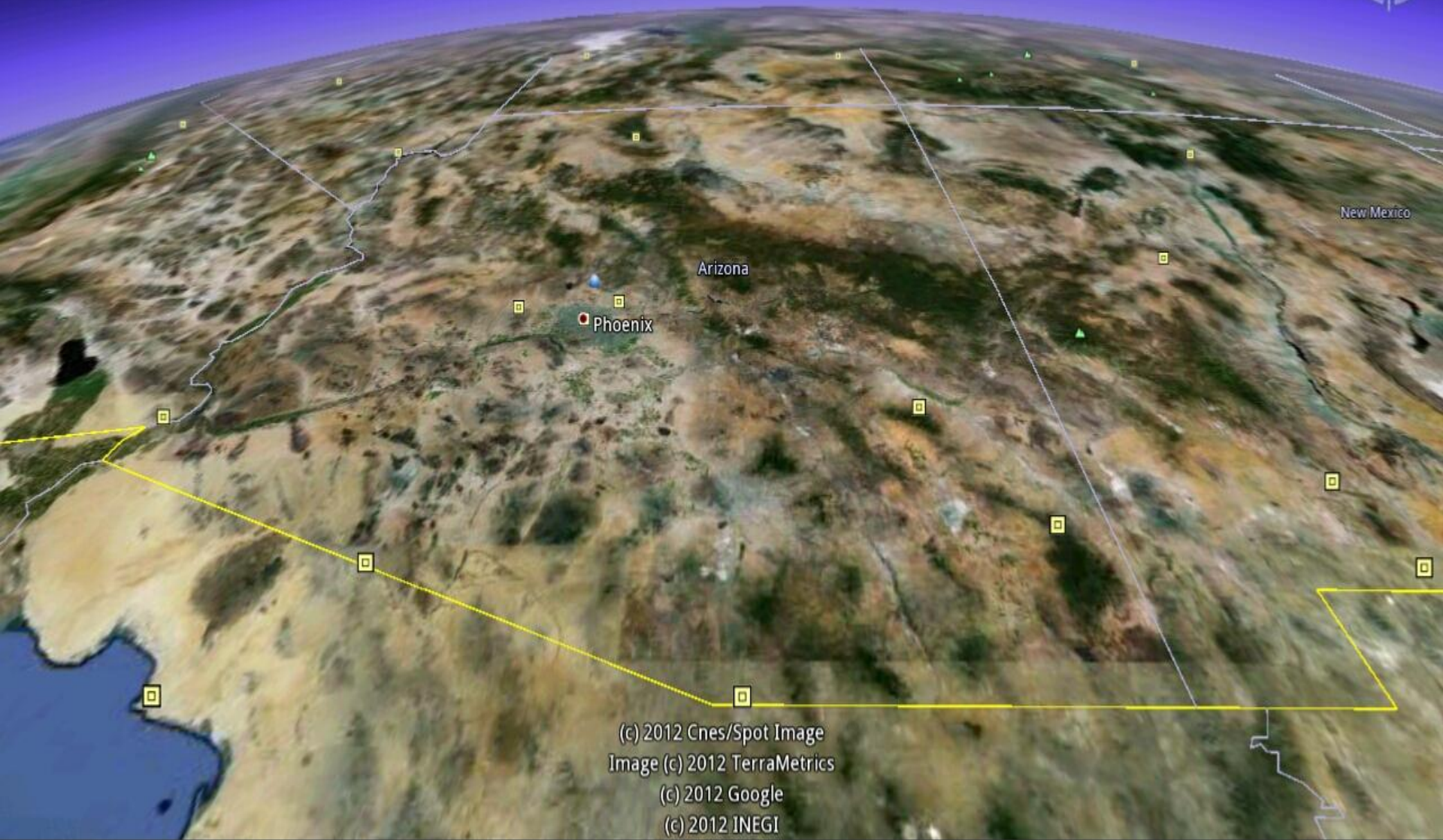


World • United States • KS



200 miles 250 km

© 2012 NAVTEQ Image courtesy of NASA © 2012 Microsoft Corporation



(c) 2012 Cnes/Spot Image
Image (c) 2012 TerraMetrics
(c) 2012 Google
(c) 2012 INEGI



World • United States • AZ • Maricopa Co. • Phoenix • South Phoenix



Urban world: Mapping the economic power of cities

600 Biggest Cities

Now

1.5 billion people
22% of global population
\$30 trillion of GDP in 2007
50% of global GDP
485 million households average income of
\$20,000

38.5% of Working Arizona Families Live below
the Poverty Line (\$38.4K family of 4)

2025

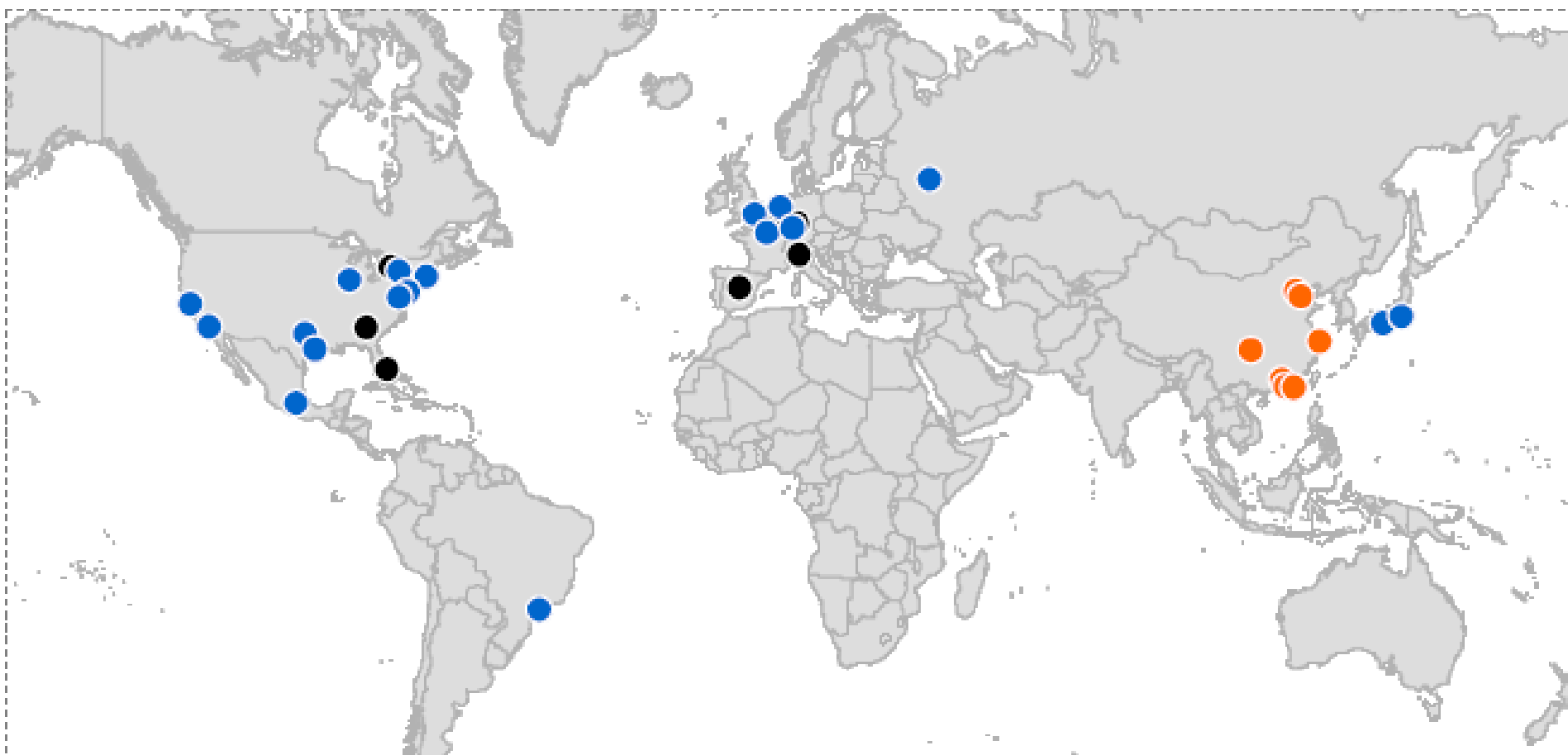
2.0 billion people
25% of global population
\$64 trillion of GDP in 2025
60% of global GDP
235 million households average income of
\$20,000
735 million households average income of
\$32,000

McKinsey Global Institute

There will be a major shift in urban economic weight from the United States and Western Europe toward Asia

Top 25 cities by GDP, 2007 and 2025¹

- Dropout—included in 2007 but not in 2025
- Top 25 in both 2007 and 2025
- Newcomer—absent in 2007 but included in 2025



¹ Predicted real exchange rate.

Arizona #1 - Most Entrepreneurial

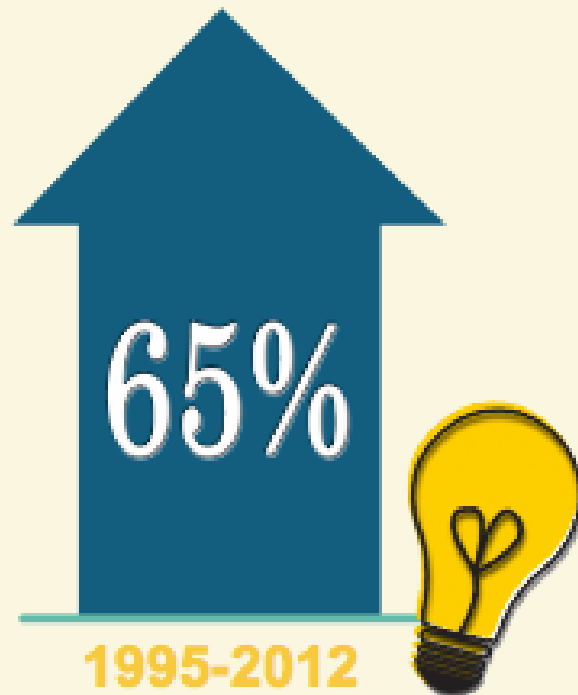
2011 startup rate: 520 per 100,000 adults

Business and property taxes are low

Labor pool is highly educated



SMALL BUSINESSES



**Small
Businesses
generated
65%
of net new
jobs over
the past
17 years.**



Small businesses are 52%
home-based and 2% franchises.

9.8 Million Jobs

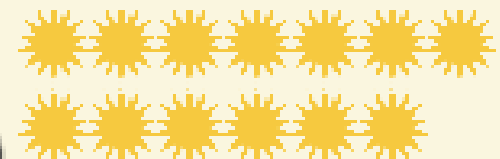


65% of New Jobs



Small firms accounted
for 65% (9.8 million) of
the 15 million net new
jobs created.

13x more patents



are produced per employee in small
firms than in large patenting firms.

Why Small Businesses Are So Important



They represent 99.7%
of all employer firms.



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Internet



They pay 44%
of total U.S.
private payroll.

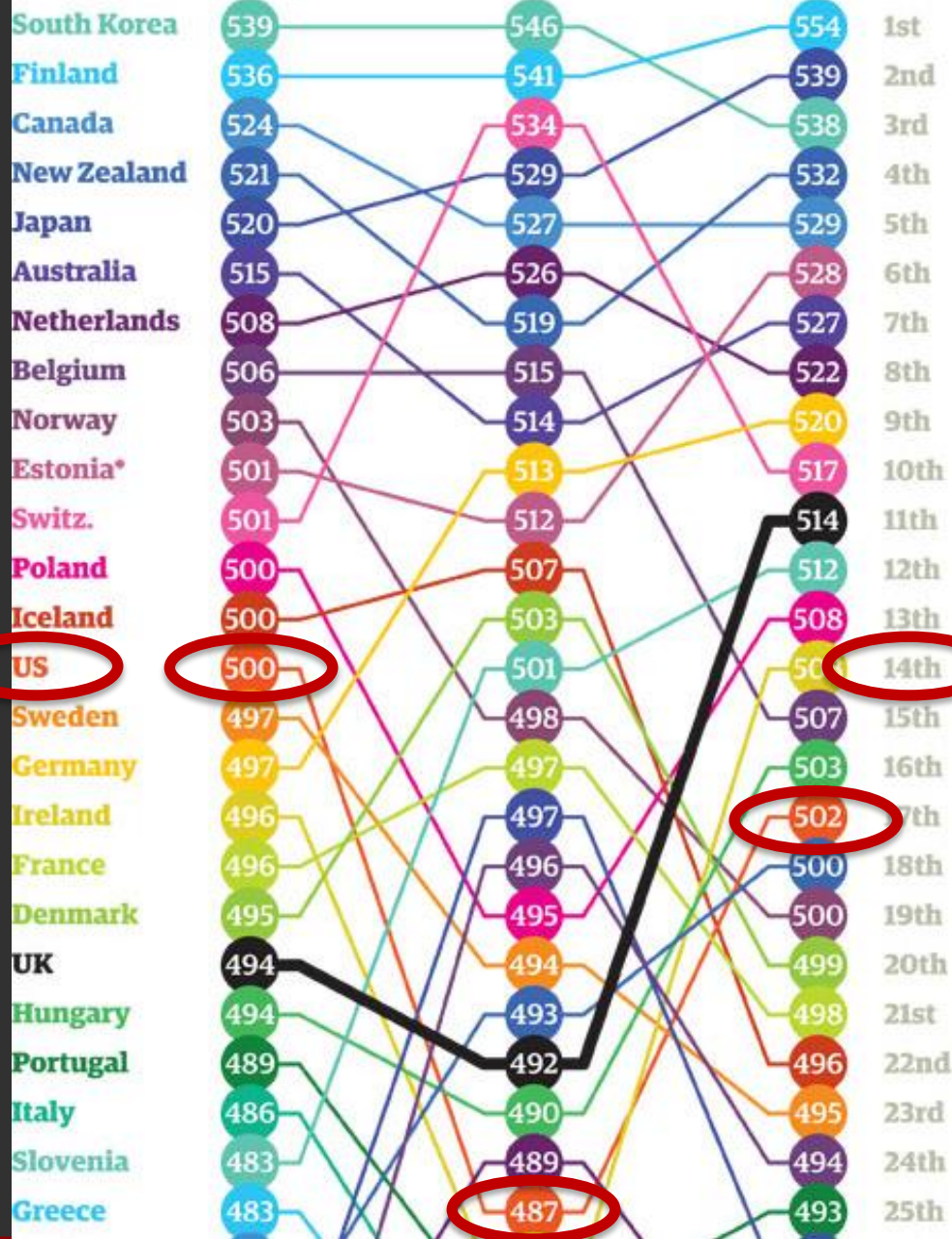


They hire 43%
of high tech
workers.

Reading

Maths

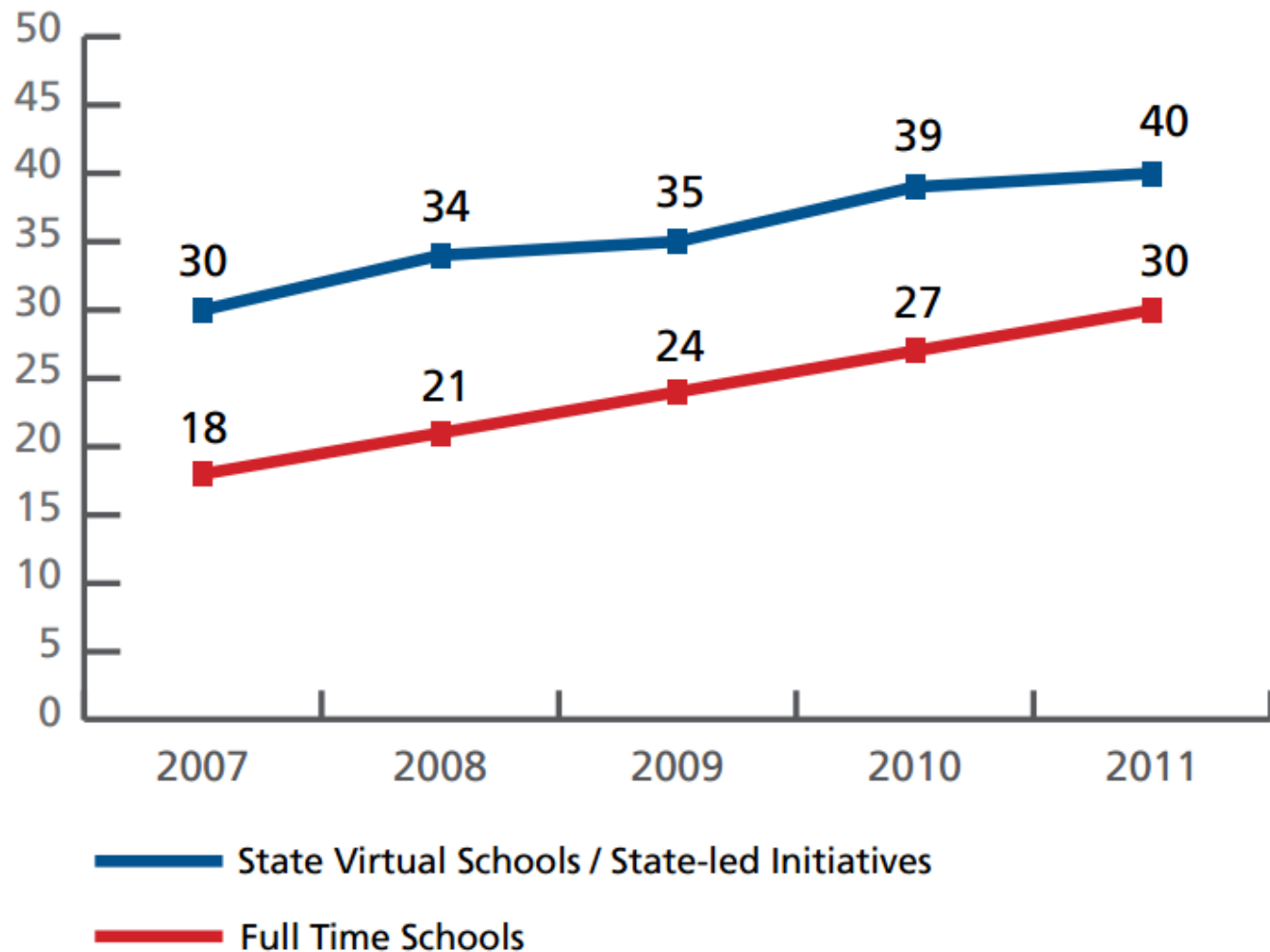
Science



2009 Organization
for Economic Co-
operation and
Development
(OECD)

14th

Number of States with Statewide Online Learning Options



Keeping Pace, 2007 – 2011



China (2030) =

200
million
college
graduates

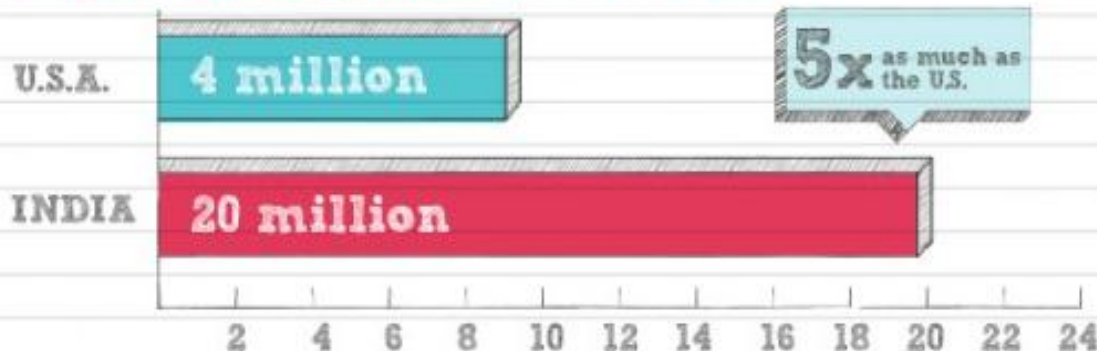


U.S.
work
force

★ ★ ★ **INDIA** ★ ★ ★

20 MILLION HIGH SCHOOL GRADUATES IN 5 YEARS

High school graduates in 2017



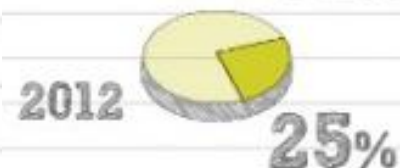
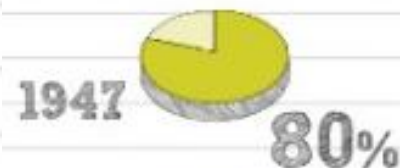
**India's public investment
in education since
the 1980s**

(\$1 billion per year in 1980s to \$44 billion in 2008)

**400% growth
since the 1980s**

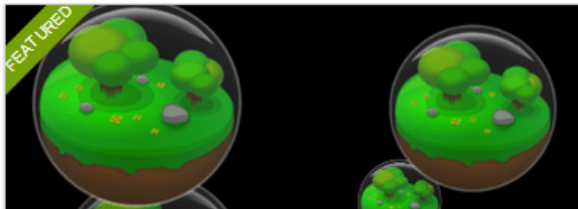
**ILLITERACY RATE
IN INDIA**

★ ★ ★ ★ ★ ★ ★



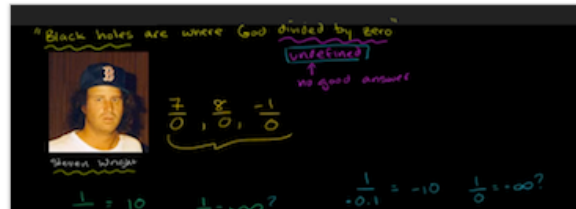
Learn almost anything for free

Q Examples: Taylor Series, Geithner Plan, oxidation, Napoleon



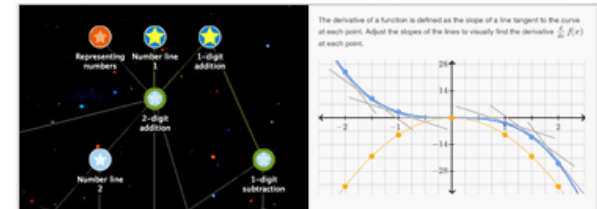
Explore computer science

Create beautiful art and design your own simulations while learning how to program.



Learn why dividing by zero is undefi...

Why is dividing by zero undefined? Think through this question with Sal's help.



Practice your math skills

Practice your math skills from addition to calculus and everything in between.

Education Models are Changing!

Better
Internet

Technology Costs

SOFTWARE LICENSES

UPGRADED HARDWARE

New Infrastructure

\$\$\$

Learning Curves

45

hours
per provider

10

customization

25

personnel training

10

cpu/network setup

AN EHR PRIMER

33% cite a loss
in revenue as their
primary concern



Financial Fears

physicians who have yet
to adopt an EHR & are
concerned about
a loss in their
productivity



78%

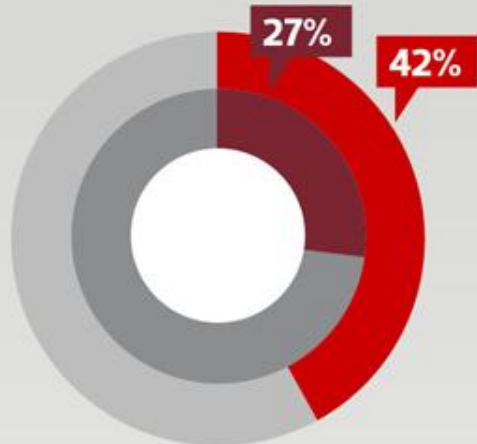
Workflow Disruption

TELEMEDICINE



27% OF PHYSICIAN OFFICES AND
42% OF HOSPITALS ALREADY HAVE
TELEMEDICINE CAPABILITIES.

SOURCE: "MOST WIRED 2011" SURVEY, HOSPITALS
AND HEALTH NETWORKS



MARKET TRENDS FOR TELEMEDICINE

1. A SHIFT AWAY FROM REIMBURSEMENT MODELS
2. TELEMEDICINE AS A STANDARD OF CARE
3. EMERGENCE OF REMOTE CLINICAL ENTERPRISES
4. THE RISE OF VIRTUAL MEDICAL CENTERS
5. mHEALTH
6. PROGRAMS VS. NETWORKS
7. MULTI-NATIONALIZATION

SOURCE: HEALTHCAREITNEWS.COM



Treat and monitor patients
with chronic conditions



Connect rural communities
with healthcare experts



Record and broadcast
procedures or educational
courses



Remotely monitor ICUs



Communicate with younger
generations of patients



Outsource consults for
radiology, specialized care
and more

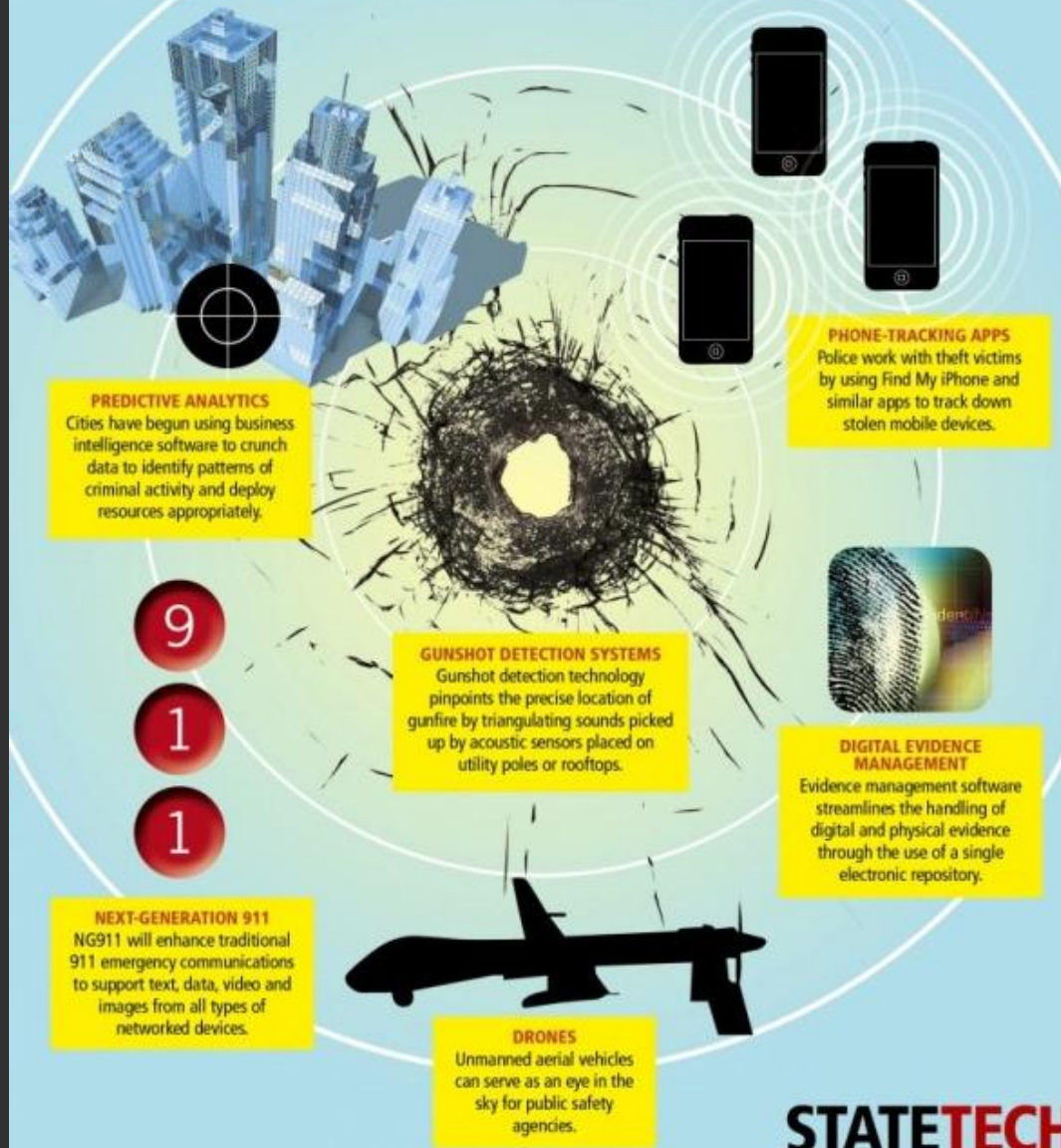


Create virtual medical
centers

Better
Internet

SMART POLICING

Technology has long served as a force multiplier for improving police operations. The new focus is on finding proactive ways to fight crime, says Joanna Salini, a research analyst for justice/public safety and homeland security at Deltek. These emerging technologies are helping support law enforcement efforts:



STATETECH

f 500

There are currently over 500 Emergency Management Group Pages on Facebook

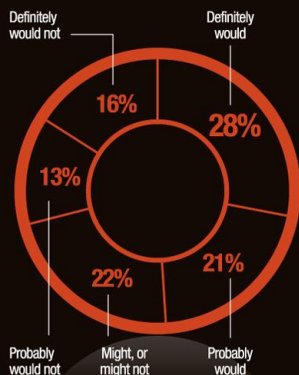
Benefits social media provides in emergency notification

- Viral messages are repeated again and again
- Opportunity for multiple "credible" spokespeople
- Ability to measure sentiment
- Intel gathering
- Ongoing contact, which can improve preparedness prior to a crisis

INFOGRAPHIC: WWW.BORISBOND.COM

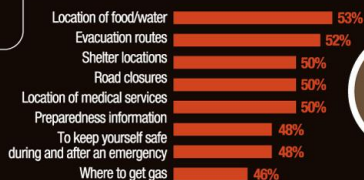
Social Media and Emergency Response

In an area-wide emergency, how likely would you be to use social media channels to let your friends and family know you are safe?



Would you sign up for alerts for these emergencies?

If someone you knew needed urgent help in an area-wide emergency, would you try to request help in any of the following ways?



Some channels limit the length of message, leading to the possibility of incomplete information

Potential for network overload during a crisis as networks are being upgraded - Users are in charge on social media

Gaining followers before a crisis

Once message is released, it can be manipulated

Threats and challenges present in social media



Twitter users on the ground sent out vital information about the Mumbai Terrorist Attacks, including emergency phone numbers and the location of hospitals that needed blood donations



The Australian Country Fire Authority used Twitter to send out information on the fires, how to donate money and blood, and where to seek emergency help



Red River was cresting at record flood levels in ND and MN. 2,600 people were getting updates delivered on the Federal Emergency Management Agency's (FEMA) Twitter



The Food and Drug Administration (FDA) recalled salmonella-tainted pistachios products. 3,000 people found out through the agency's Twitter feed

Social Media Use in Emergencies



FEMA's tweets informs followers of the locations of Red Cross shelters and how to care for pets during the crisis



Dramatic scenes the US Airways plane that crashed into the Hudson River were first seen on social networking site Twitter



When a gunman opened fire in the Soldier Readiness Center of Fort Hood, TX, Twitter was able to provide news and updates to the public and Soldiers around the world

Emergency Management Groups on Facebook

- Information Systems for Crises Response and Management (ISCRAM)
- Arkansas Tech University Department of Emergency Administration and Management
- Emergency Awareness at the University of Maryland
- FSU Emergency Management
- Michigan Emergency Management
- Mississippi Emergency Management Agency
- Braintree Emergency Management Agency
- Utah Emergency Management
- NYC Emergency Management

Emergency Agencies on Twitter

1,244,357
CDC Emergency

254,056
American Red Cross

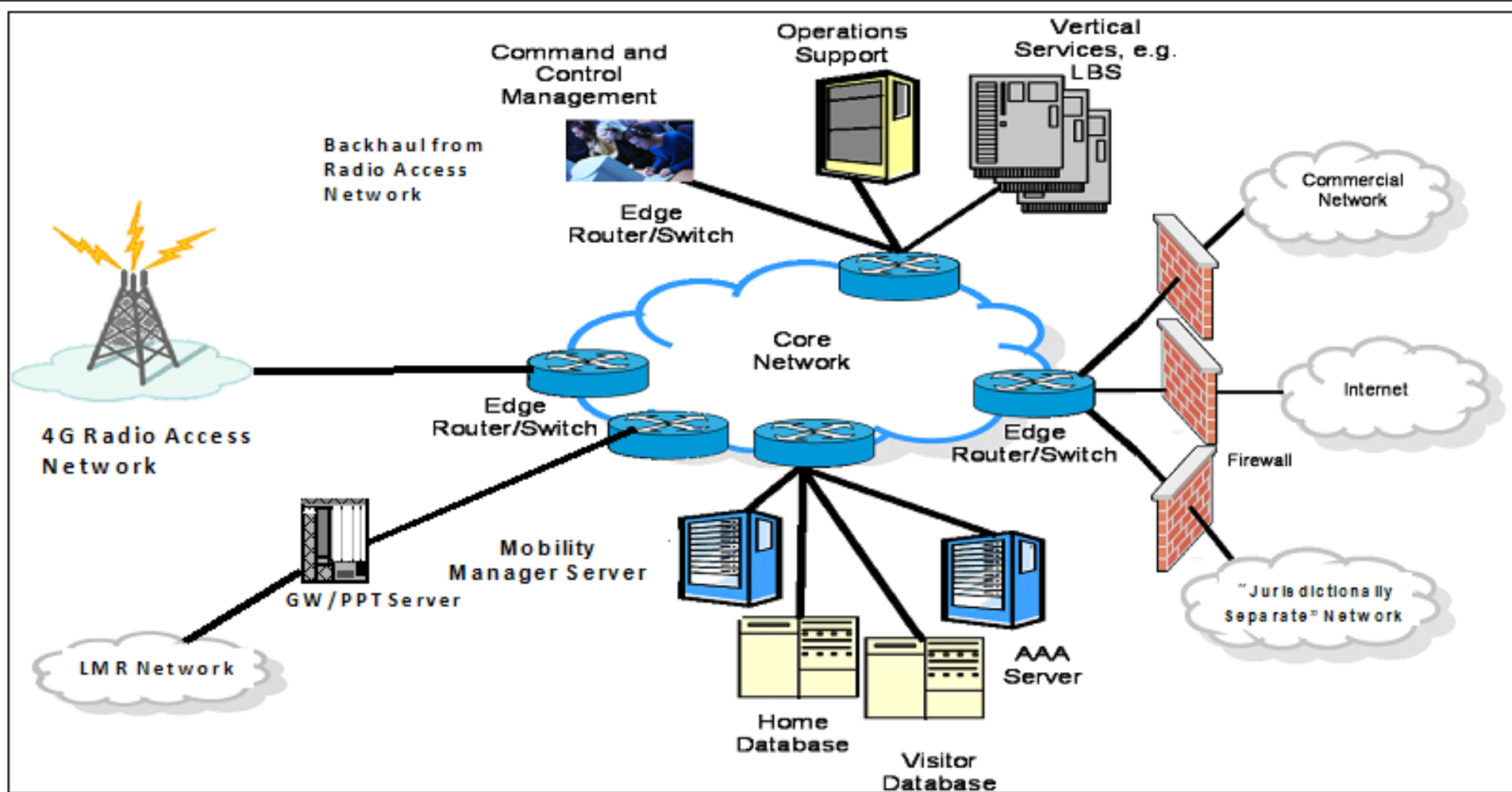
112,604
FDARECALLS

90,855
NIH

52,759
U.S. Army

28,282
FEMA



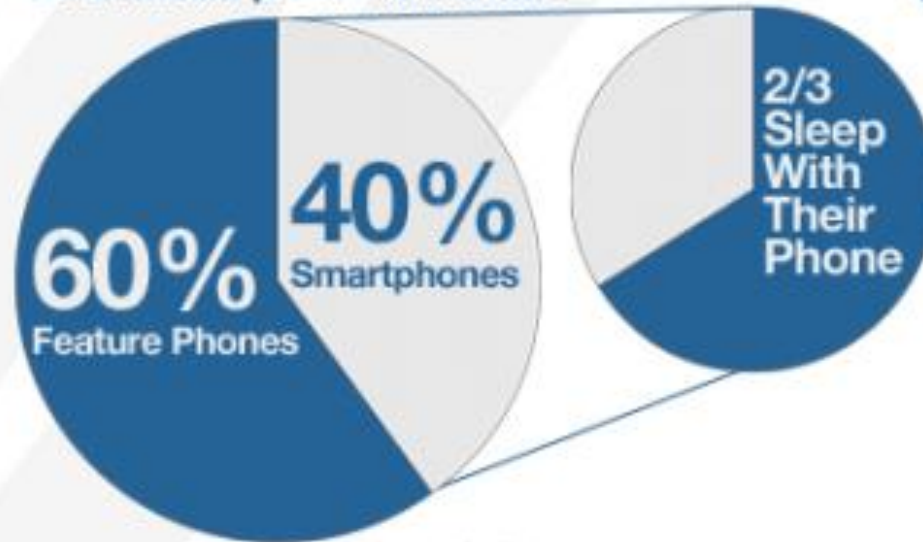


PSBN
\$7Billion

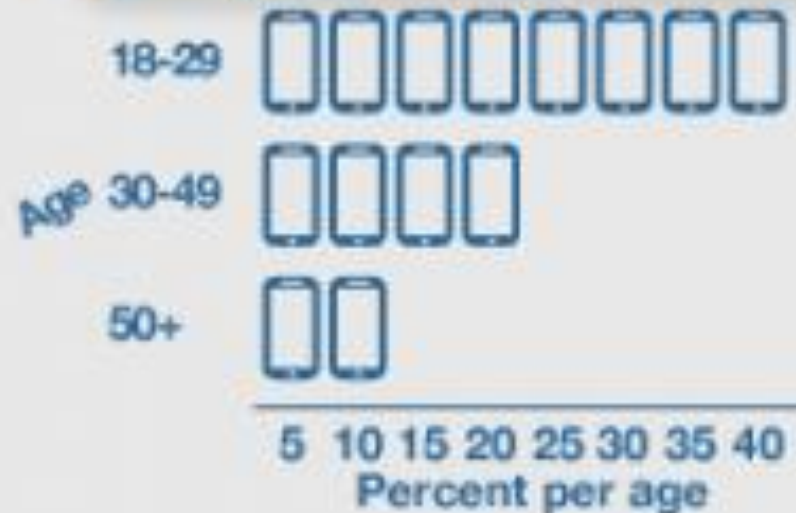
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Americans Must Be Constantly Connected...

Of all mobile phones in the US:



Americans who use their smartphones primarily for internet access



AMERICA & THE INTERNET

Leading the way in the information age, Americans' digital media consumption is at an all-time high. Branching out from traditional forms of media consumption, we as Americans are beginning to redefine the standard of internet connectivity through various forms of mobile devices.

10%

OF AMERICANS
still don't have
internet fast
enough to view
simple graphics
and webpages

The other

90%

are primarily white, college
graduates with annual incomes
in excess of \$50,000

During August of 2011 alone, over

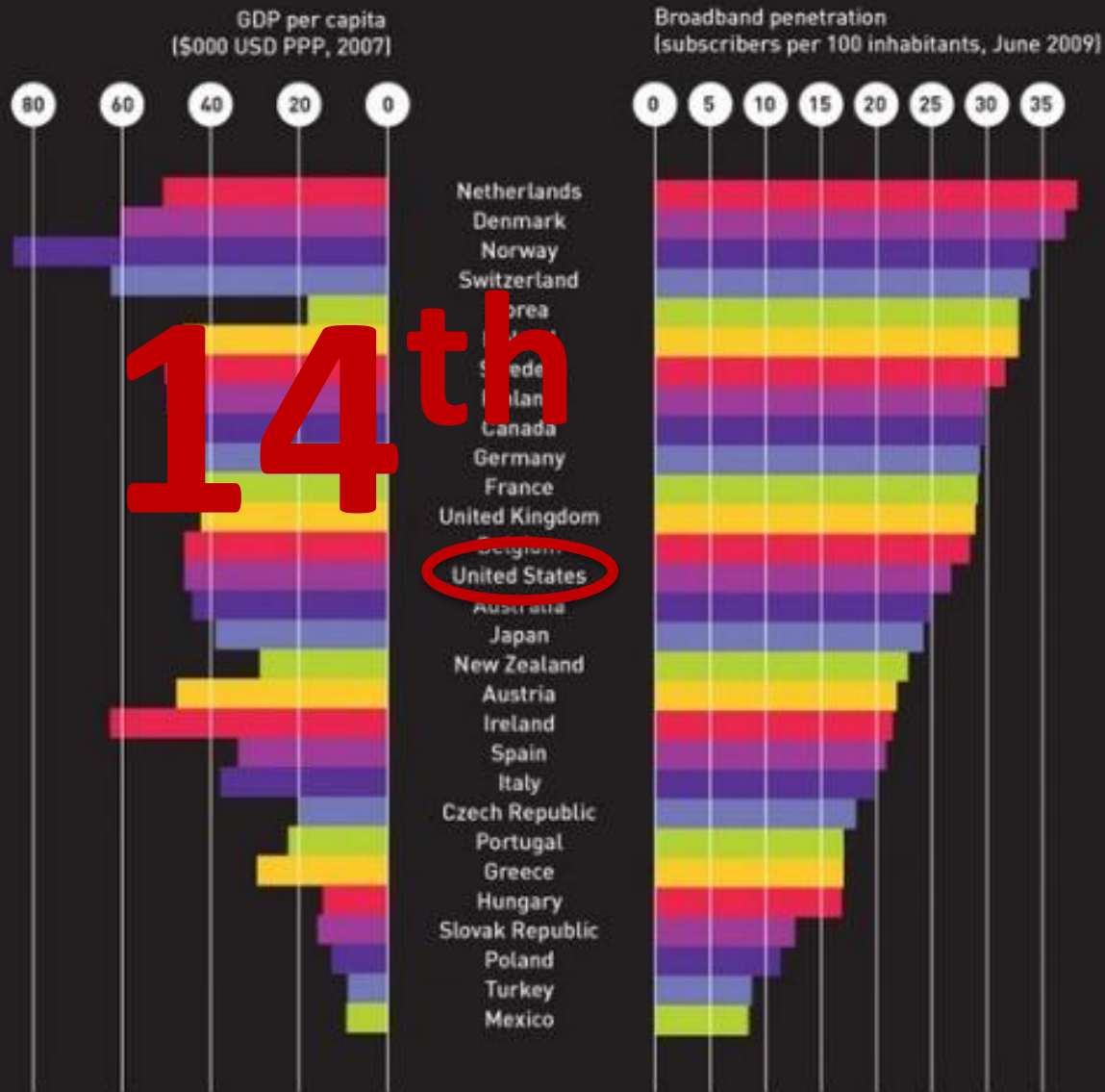
9 BILLION

minutes of video were streamed through sites like

You Tube, **hulu** & **NETFLIX**

Broadband Penetration vs GDP

June 2009



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ASET

Arizona Strategic Enterprise Technology

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